BOTANICA

THE BEGONIACEAE OF COLOMBIA (*)

By **Lyman B. Smith** and **Bernice G. Schubert**
Gray Herbarium of Harvard University, Cambridge, Massachusetts.

There has been no systematic treatment covering the *Begoniaceae* fo Colombia since A. De Candolle's world-monograph in the Prodromus in 1864, so it was to be expected that subsequent collections would yield some novelties. However, after studying the *Begoniaceae* of Argentina, Perú, Bolivia (**) and Guatemala in detail, we were quite unprepared for the rich development of the family in Colombia, where a third of the species proved to be new and well over half of them endemic. Undoubtedly these results are attributable to the complex mountain system and we can expect many more novelties as collectors go to new valleys and river-basins. In fact an analysis of the distribution of species by the twenty-three Departments and territories of Colombia shows that only twelve Departments are represented by the twenty new species and four are not represented at all.

In most cases when we say *Begoniaceae* it is equivalent to *Begonia* alone, since outside of that we have only the Colombian *Begoniella* and Ecuadorian *Semibegoniella* in the New World. *Begoniella* consists of a mere three species and a variety and *Semibegoniella* is of very doubtful value, being probably nothing more than aberrant plants of *Begonia* section *Casparya*.

The characters on which sectional and specific distinctions may be based in the genus *Begonia* are many, their range of development

---

(*) Contributions from the Gray Herbarium of Harvard University, No. CLXIV.

(**) See: Smith & Schubert in Darwiniana v. 78-117 (1941); in Field Mus. Pub. Bot. xiii, pt. 4, No. 1, 181-202 (1941); in Rev. Univ. Cuzco xxxiii, No. **87**, 71-93 (1945).

is great and the combinations in which they occur almost as numerous as the mathematical possibilities. Habital types from the very delicately herbaceous to the stout fruticose occur and are scapose or caulescent and tuberous or fibrous-rooted. The habit is, in general, uniform throughout a section but much careless misidentification has resulted from observation of habit alone without study of the more fundamental characters. The leaves are basifixed to peltate, simple (so far as we know in the Colombian species), entire to lobed and straight to oblique or transverse. Variation in texture and indument is very great and is probably due in part to ecological influences.

It is difficult to say with accuracy whether a given species is monoecious or dioecious because, although both staminate and pistillate flowers may be borne on the same plant, their flowering periods are often spaced at such intervals that the two sexes are never observed together. One plant may, however, often bear a completely staminate and a completely pistillate inflorescence, both maturing at the same time or a plant may have a truly monoecious inflorescence. Although we do not feel that monoecism or dioecism of the inflorescence should be used alone as a diagnostic character, the form of the inflorescence (most often cymose) and the manner in which the staminate and pistillate flowers are borne (either separately or together with one pistillate flower terminal or otherwise) are specific.

It is in consideration of the flowers that most interesting examples of diversity are found. The characters are, for the most part, constant for the species and, to a certain extent, for the sections. The tepals of both sexes vary in number, texture, indument and shape. We are following the practice, established in the Natürlichen Pflanzenfamilien by Warburg and Irmscher, of designating the perianth-segments as tepals (where necessary as outer and inner tepals) and not distinguishing between calyx and corolla. Although in some species the distinction between the two series is definite, in others it appears to be a gradual regression from well developed to abortive members. In general, distinct series of perianth-segments are the rule in staminate flowers and the exception in the pistillate. Color has been considered diagnostic only occasionally in our treatment and then only in combination with other characters. The staminate flowers, which are always ebracteolate, have, in addition to their diagnostic tepal-characters, great distinctiveness in the stamens and receptacle. The stamens vary in anther-length as well as in the length of production of the connective beyond the loculi. The receptacle ranges from a low torus to an elongate column and derives still greater variation from the length and position of the filaments which are sometimes short and sufficiently crowded to give a strobilate appearance to the androecium. The variation of filament-length is gradual except in *B. Killipiana* where the stamens are in two distinct series.

The pistillate flowers are frequently bracteolate and the bracteoles though usually small and inconspicuous (often early deciduous) are occasionally large, persistent, fimbriate and in one species, *B. Rossmanniae,* accrescent. When persistent they are of diagnostic value and their presence or absence is a specific character. The pistillate tepals as noted previously, are more often than not of only one series, somewhat irregular in shape, and usually becoming progressively smaller toward the center. Their number may vary: when the usual number is two, a small third inner tepal is often found; when the number is more than five it is usually not constant. The styles have also reached a high degree of development and their character is constant for the species and in most cases for sections. Variation occurs in the degree of fusion, ramification, and in the position of the stigmatic papillae.

In his treatment in the Prodromus (p. 279) A. De Candolle noted that the condition of the placentae varies "... integris vel bipartitis, nunc in eodem ovario variantibus (sect. Poecilia) ...". Warburg and Irmscher in the Pflanzenfamilien, however, make the first division of their keys to the American sections on the basis of whether the placentae are simple or divided, admitting only a rare exception under the section *Poecilia.* Schulz (in Urb. Symb. Ant. vii, p. 28) follows De Candolle, demonstrating in his key that the character of the placentae is variable and stating under *Begonia humilis* that "Placentae in speciminibus robustis bipartitae, in teneris ± simplices". On the basis of very numerous dissections we are unable to consider this character a constant one to distinguish sections or even constant within species; in the specific descriptions we have noted the condition as we have found it. The fruit which is always a capsule may be horned or winged. The horned type is characteristic of section *Casparya;* the winged type of the other sections. In the development of horns and wings there is usually sufficient constancy for diagnostic purposes. The fruit together with both types of flowers are, in general essential for determining the systematic position of the species.

There are too many gaps in our knowledge to allow us to arrange the species of *Begonia* by sections, so the key and sequence are frankly artificial. However, it has been possible to segregate some sections, most notably *Casparya*. In this key we have emphasized characters of habit and leaf, because so many specimens do not have complete flowers and fruit.

We are indebted to the following institutions for the privilege of studying their collections or duplicates in the preparation of this paper:

Chicago Natural History (Field Museum) Museum, Chicago. Illinois (CM); Comisión de Botánica de la Secretaría de Agricultura y Fomento del Departamento del Valle del Cauca (Valle); Herbario Nacional Colombiano, Bogotá (Col); Missouri Botanical Garden, St. Louis, Missouri (Mo); New York Botanical Garden, New York, New York (NY); United States National Herbarium, Smithsonian Institution, Washington, D. C. (US).

Photographs of types in European herbaria taken by Mr. J. Francis Macbride under the Rockefeller Foundation Fund have proved of great value, especially in view of the subsequent destruction of many of the specimens. These were taken at the Conservatory of Botany at Geneva (Gen) including the Delessert Herbarium and at the Berlin Herbarium (Berlin). Where the identity seems reasonably certain we have recorded collections on the basis of A. De Candolle's citations (! A. DC.) in the Prodromus. Mr. E. P. Killip has most kindly placed at our disposal his critical notes and photographs of types made during a preliminary study of the group.

BEGONIACEAE R. Br. Annual or perennial herbs, shrubs or rarely small trees. Stem elongate and succulent or woody or sometimes reduced to a tuberous rhizome, sometimes climbing. Leaves usually alternate or rarely subverticillate, entire, serrate, lobed or digitately parted, usually asymmetric, sometimes peltate. Stipules 2, free, persistent or deciduous. Peduncles axillary. Inflorescence most commonly cymose, sometimes 1-flowered or racemose. Cymes regular or strongly one-sided, unisexual or bisexual. Flowers monoecious. Tepals free or connate. Stamens indefinite, inserted on the receptacle, filaments free or united. Styles usually 3, free or connate, usually bifid. Ovary inferior in the American species, usually 3-celled and 3-winged or 3-horned. Placentae usually axile, simple or divided. Fruit usually capsular.—R. Br. in Tuckey, Congo. 464 (1818); Lindl. Syst. Nat. ed. 2, 56(1836); Klotzsch, Begoniaceen-Gattungen und Arten in Abhandlungen der Königl. Akademie der Wissenschaften zu Berlin, 1854. 1-135, t. 1-12 (1855)[1]; A. DC. in DC. Prod. xv. pt. 1, 266 (1864); Irmscher in Engler & Prantl, Pflanzenfam. ed. 2, xxi. 548 (1925). C. Chevalier, Les Bégonias (1938).

Key to Genera

Tepals of both staminate and pistillate flowers free. .... 1. **Begonia.**
Tepals of both staminate and pistillate flowers connate. ...... 2. **Begoniella.**

1. BEGONIA L.

General characters of the family of which it contains more than ninety per cent of the species. Tepals free, usualy 4 staminate in two pairs and 5 pistillate. Placentae simple or divided. Fruit usually bearing 3 unequal wings.—Sp. Pl. 1056 (1753).

About 800 species. Nearly pantropical.

NOTE: On the advice of the editor, Dr. A. Dugand, we have placed the key to species of *Begonia* at the end of the treatment, so that there will be no confusion regarding the date of publication of new species in this continued article.

1. **Begonia (? § Huszia) hydrophylloides** Smith & Schubert, spec. nov., e fragmentis solum cognita sed verisimiliter acaulis, omnino glabra; folio unico cognito latissime ovato, subsymmetrico, acuminatim lobato, basi cordato, 23 cm. lato, palmatim 6-nervato, dentato, petiolo minimum 2 dm. longo, stipulis ignotis; scapo unico cognito 57 cm. longo, 8 mm. diametro; inflorescentia cymosa, multiflora, ca. 10 cm. diametro; bracteis deciduis, ellipticis, 5 mm. longis, integris, membranaceis; pedicellis masculinis ad 17 mm. longis; tepalis masculinis 4, integris, albis, exterioribus late ovatis, basi cordatis, 10 mm. longis, interioribus oblongis; staminibus in columna insertis, multis, antheris obovoideis, quam filamentis multo brevioribus; floribus femi-

---

[1] Cited simply as "Kl. Begon." hereafter.

neis perjuvenilibus solum cognitis; tepalis femineis 5, inaequalibus, ovatis, integris; stylis 3, bifidis; ovario 3-alato, alis verisimiliter inaequalibus. Tab. 1.

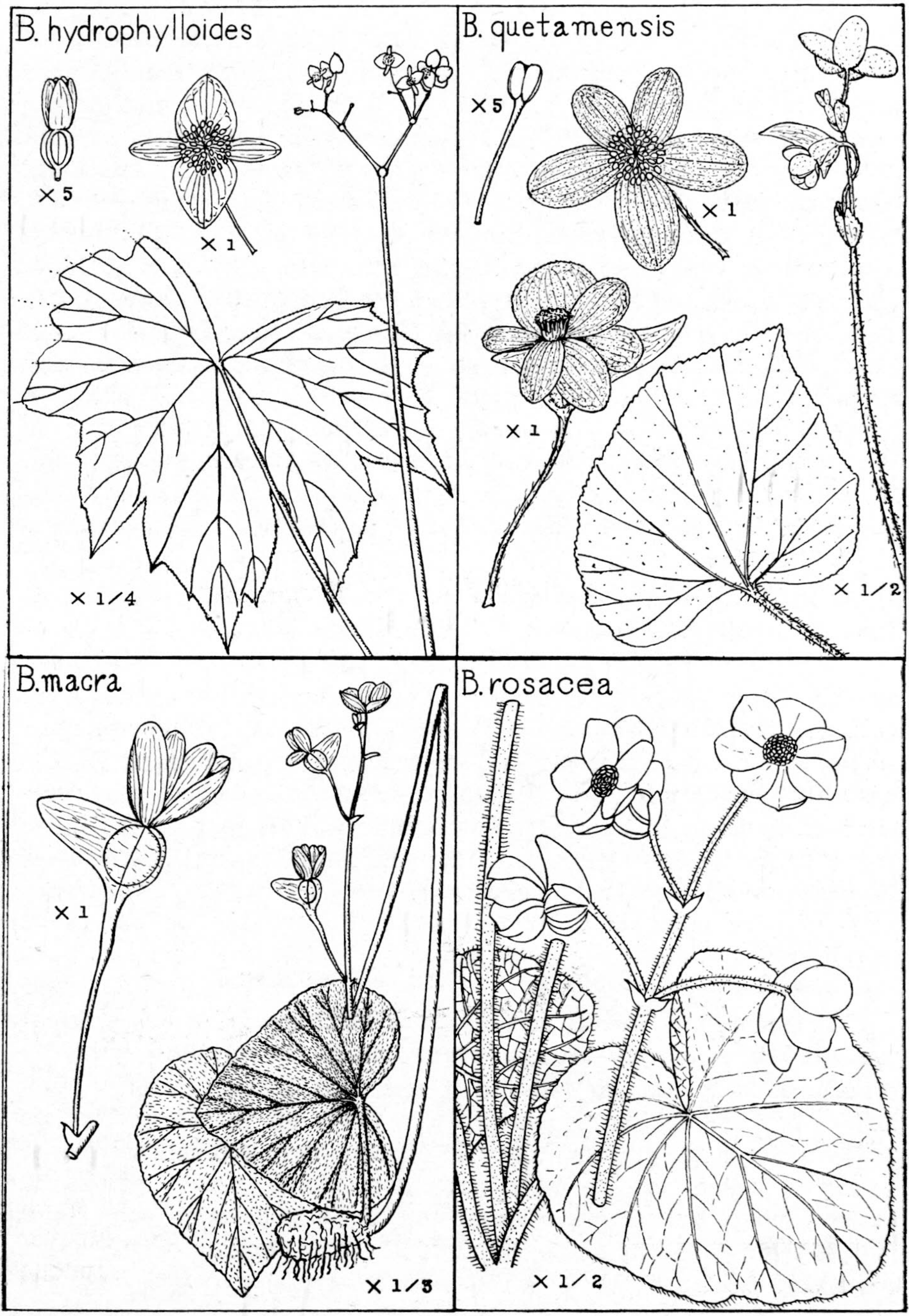
CUNDINAMARCA: moist bank, Guayabetal to "Monte Redondo" (= Monterredondo) southeast of Quetame, alt. 1300-1500 m., Sept. 6, 1917, *Pennell 1803* (NY, **type**).

Although we can not be sure of the relationship of this species or even of its section on the basis of an unconnected leaf and inflorescence, the relatively great size of the petiole and peduncle make it appear extremely probable that this is a scapose plant with a tuberous base.

2. **Begonia (§ Huszia) quetamensis** Smith & Schubert, spec. nov., acaulis, tuberosa; foliis late ovatis, acutis, basi obliquis subtruncatisque, ad 13 cm. longis, palmate nervatis, dentatis, supra dissite et subtus ad nervos puberulis, petiolo 22-24 cm. longo, piloso, stipulis ignotis; scapo ad 5 dm. longo, 4 mm. diametro, plus minusve piloso; inflorescentia pauciflora, pseudoracemosa, puberula, bracteis persistentibus, ellipticis, 12 mm. longis, integris; floribus albis; pedicellis ad 4 cm. longis; tepalis masculinis 5, inaequalibus, ellipticis, ad 17 mm. longis, minute. ciliato-serrulatis, intus dense minuteque papillatis; staminibus multis, antheris subglobosis, quam filamentis multo brevioribus, connectivo haud producto; floribus femineis ebracteatis; tepalis femineis 6, inaequalibus, late ellipticis, ad 10 mm. longis; stylis multifidis, stigmatibus capitatis; ovario ellipsoideo, placentis bipartitis, undique ovuliferis; capsula alata, alis valde inaequalibus, ala maxima oblonga, adscendente, 15 mm. lata, reliquis triangularibus, parvis. Tab. 1.

CUNDINAMARCA: moist bank, "Monte Redondo" (= Monterredondo) to Quetame, alt. 1400-1500 m., Sept. 7, 1917, *Pennell 1853* (NY, **type**).

Begonia quetamensis appears to be most closely related to *B. rubricaulis* Hook. of Argentina, which was placed in the section *Huszia* by A. De Candolle although it contradicted his character of a merely bifid style. It seems best for the present to keep such species in *Huszia* on account of their scapose habit, rather than to place them under the caulescent *Eupetalum* where both A. De Candolle's and Irmscher's keys would take them.


B. hydrophylloides
× 5
× 1
× 1/4
B. quetamensis
× 5
× 1
× 1
× 1/2
B. macra
× 1
× 1/3
B. rosacea
× 1/2

TAB. 1

3. **Begonia (§ Huszia) macra** A. DC. Stemless herb; base tuberous, about 25 mm. long, bearing gemmae and fibrous roots; leaves usually 2, broadly ovate to suborbicular, 5-7.5 cm. long, acute, deeply cordate at base, dentate, fulvous-tomentose on both sides, petiole 35-60 mm. long, tomentose, stipules ovate, acute, 4-6 mm. long, becoming glabrous; scapes often 2, naked, slender, soon glabrous, 2-3 dm. high, much exceeding the leaves; cymes only 2- or 3-branched, few-flowered, bracts deciduous, elliptic, crenulate, colored, the middle ones 9 mm. long; pedicels 6-24 mm. long, puberulent; flowers rose; staminate tepals 6, the outer broadly elliptic, 12 mm. long, the inner obovate, 10 mm. long; anthers obovoid, less than 1 mm. long, slightly shorter than the filaments; pistillate bractlets doubtful; pistillate tepals 5, accrescent, 6-8 mm. long at anthesis, later increasing to 10-12 mm.; capsule 3-celled, obovoid, subacute at base, 12 mm. long, 18 mm. wide, purplish, bearing a single ovate obtuse wing.—Endemic.—A. DC. in Ann. Sci. Nat. ser. 4, xi. 121 (1859); in DC. Prod. xv. pt. 1, 284 (1864). Tab. 1.

CUNDINAMARCA: Eastern slope, Ubalá, alt. 1700 m., 1851-57, *Triana 3029* (British Museum, isotype, phot. Killip).

Doubtfully referred here: CUNDINAMARCA: Páramo de Guasca, eastern slope, Quebrada de Juiquín, Cordillera Oriental, alt. 2500 m., Aug. 27, 1941, *Cuatrecasas & Jaramillo 11989* (US). This specimen agrees in most details with what we know of *Begonia macra*, but it has only four staminate tepals where *B. macra* is described as having six. However, in both of its staminate flowers, one of the inner tepals is deeply cleft while the other is not even emarginate, thus suggesting considerable irregularity in the tepal number. The styles are much branched and the placentae bifid, characters not noted in the original description of *B. macra*.

4. **Begonia (§ Huszia) rosacea** Putz. Herbaceous, stemless, tuberous; leaves few, very broadly ovate, obtuse, deeply and narrowly cordate at base, 7-11 cm. long, to 10 cm. wide, crenate, ciliate, green and glabrous above, paler beneath and pilose on the nerves, petiole 7-10 cm. long, red, pilose; scape 30-50 cm. high, red, pilose; cymes 4-flowered, dichotomous, very lax, monoecious; bracts persistent, ovate, acute, 6-8 mm. long, glabrous; pedicels to 35 mm. long; staminate tepals 7-8, broadly elliptic, 10-16 mm. long, pinkish white, spreading, the outer ones broader and somewhat greenish; stamens

numerous on a torus, filaments free, anthers obovoid; pistillate bracts obovate, acute, nearly equaling the ovary; pistillate tepals 6-7, like the staminate; styles much branched, the stigmatic tissue spiral but not continuous, placentae bifid, ovuliferous throughout; capsule subglobose, pubescent (! Putzeys), unequally 3-winged, the smaller wings marginiform, the larger ovate, subacute, slightly ascending. — Endemic. — Putz. in F. Serres, ser. 2, ii. 25, t. 1194 (1857); in Belg. Hortic. vii. 366, fig. 63 (1857); A. DC. in DC. Prod. xv. pt. 1, 284 (1864). Tab. 1.

META or VICHADA: between the Río Meta and the Río Guaviare. Described and illustrated from cultivated material. It is doubtful if there is or ever was herbarium material.

5. **Begonia** (? § **Huszia) lutea** Smith & Schubert, spec. nov., herbacea, acaulis, tuberosa; tubero ca. 1 cm. diametro; foliis paucis, paulo asymmetricis, rectis vel obliquis, late ovatis vel suborbicularibus, breviter acutis vel obtusis, basi cordatis, ad 12 cm. longis, 11 cm. latis, dentatis, utrinque sparse tomentosis, subtus ad nervos ferrugineis, petiolo ad 10 cm. longo sed plerumque multo breviore, tomentoso, stipulis deciduis, ignotis; scapis 1-5, gracillimis, nudis, tomentosis, ad 14 cm. longis; cymis paucifloris, diffusis, subunilateralibus, bracteis persistentibus, lacerato-palmatifidis, 3-5 mm. longis, membranaceis; floribus luteis; pedicellis gracillimis, ad 2 cm. longis, tepalis masculinis 4, exterioribus late ovatis, 6 mm. longis, interioribus anguste obovatis, brevioribus; staminibus in columna insertis, multis, antheris subglobosis, quam filamentis brevioribus, connectivo obtuse producto; floribus femineis ebracteatis, tepala femineis 5, ellipticis, subaequalibus, ca. 5 mm. longis; stylis 3, breviter connatis, bifidis, stigmatibus spiraliter cinctis; ovario 3-loculato, ellipsoideo, placentis simplicibus, angustis; capsula trialata, alis inaequalibus, ala maxima ovata, plus minusve obtusa, ad 1 cm. lata. Tab. 2.

META: moist forest-slope near Río Guatiquía, Villavicencio, Aug.-Sept., 1917, *Pennell 1537* (NY, **type**; G).

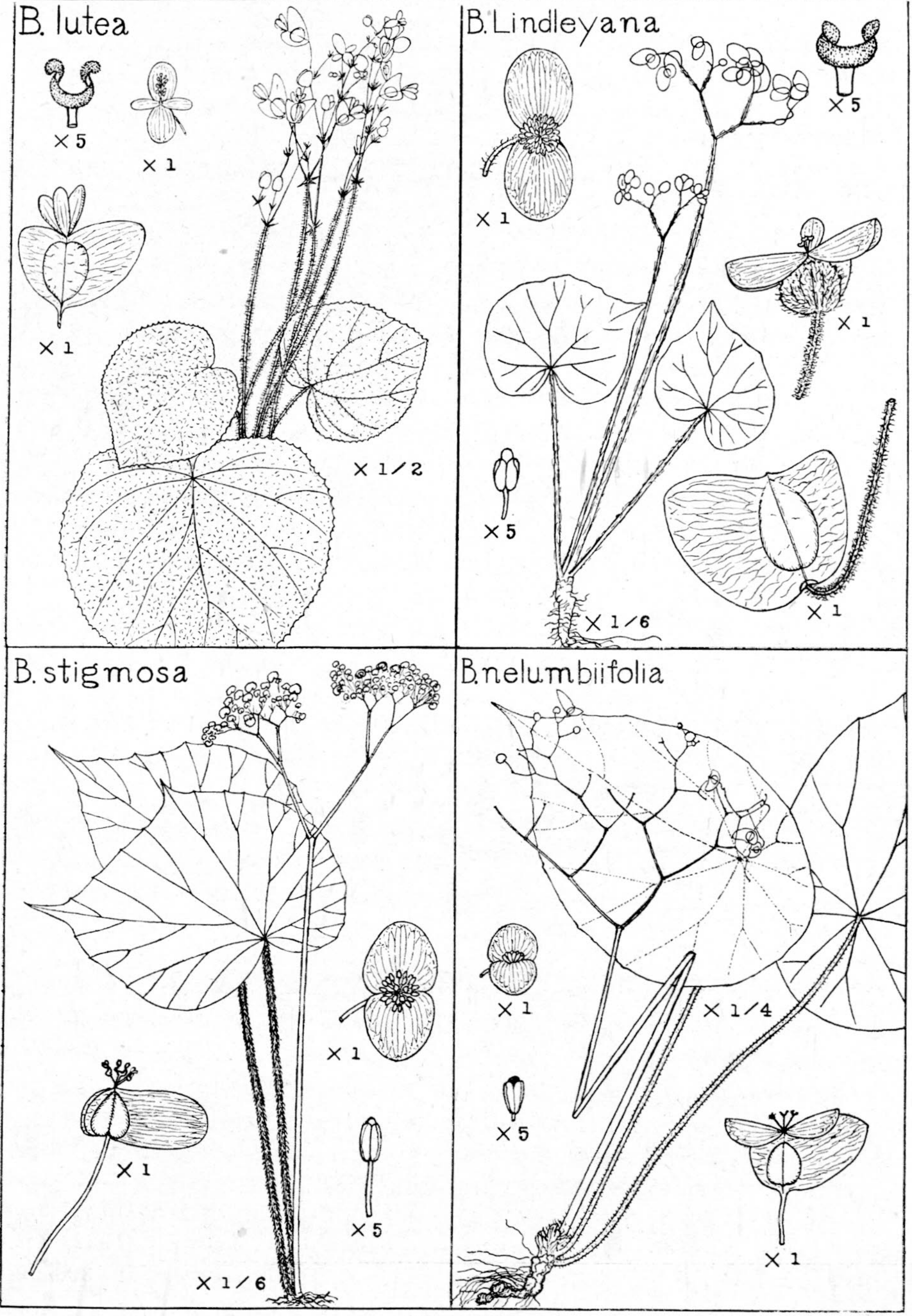
VAUPES: on mossy rocks in forest, Río Guayabero, alt. 240 m., Nov. 8, 1939, *Cuatrecasas 7547* (US); on damp mossy crags of sandstone cliffs, Cerro del Castillo, upper Apaporis Basin, Apaporis River, alt. ca. 300 m., July 27, 1943, *R. E. Schultes 5658* (G).

6. **Begonia** (§ **Magnusia) Lindleyana** Walp. Herbaceous, fuscous-villous throughout at least when young; rhizome usually erect, up

to 3 dm. long, subligneous at base, 10-25 mm. thick, internodes very short; leaves palmately 7-9-nerved, oblique, very broadly ovate, abruptly acuminate, from almost evenly rounded and entire to deeply acuminate-lobed and coarsely dentate, 8-22 cm. long, thin, soon glabrous above, petioles erect, 3-22 cm. long, 2-5 mm. thick, stipules persistent, imbricate, subtriangular, acuminate-setiferous, 15-25 mm. long, entire; peduncles exceeding the leaves, up to 48 cm. long; cymes usually unisexual and somewhat irregular with one side slightly longer but diffuse and broader than high, few-to many-flowered; bracts deciduous, very broad, obtuse, the lowest 17-20 mm. long, serrate, ciliate, very thin; staminate tepals 2 or 4, the outer ones suborbicular, 6-13 mm. long. entire, white, the inner when present smaller and narrowly obovate; stamens numerous, filaments short, anthers oblong, obtuse; pistillate flowers bracteolate, tepals 2 or sometimes a smaller one inside the others, suborbicular, smaller than the staminate; ovary 3-celled, placentae bifid, ovuliferous throughout, styles short-connate, the stigmatic tissue lunate-capitate at their apices; capsule suberect, ellipsoid, 8-12 mm. long, wings unequal, the largest ovate, obtuse or acute, subascending, 11-15 mm. wide.—Southern Mexico, Central America.—Walp. Rep. ii. 209 (1843); A. DC. in DC. Prod. xv. pt. 1, 336 (1864). *B. vitifolia* Lindl. in Bot. Reg. xxviii. misc. 21 (1842), non Schott (1827). *B. sarchophylla* Liebm. in Kjoeb. Vidensk. Meddell. 1852. 12 (1853); A. DC. op. cit. 337. *B. sericoneura* Liebm. op. cit. 13; A. DC. op. cit. 336. *B. cardiocarpa* Liebm. loc. cit.; A. DC. op. cit. 337. *Gireoudia Lindleyana* Kl. in Monatsber. Berlin Akad. 125 (1854). *G. cardiocarpa* Kl. loc. cit. *G. fibrillosa* Kl. Begon. 86 (1855). *G. pilifera* Kl. loc. cit. *G. vitifolia* Kl. op. cit. 87. *G. sarchophylla* Kl. op. cit. 88. *G. sericoneura* Kl. op. cit. 89. *Begonia lanuginosa* A. DC. in Ann. Sc. Nat. ser. 4, xi. 131 (1859); in DC. Prod. xv. pt. 1, 327 (1864). *B. pilifera* A. DC. op. cit. 337. *B. Biolleyi* C. DC. in Bull. Soc. Bot. Belg. xxxv. pt. 1, 263 (1896). *B. nicaraguensis* Standl. in Pub. Field Mus. Bot. iv. 237 (1929). Tab. 2.

SANTANDER: rocky bank, valley of Río Suratá, between Bucaramanga and El Jaboncillo, alt. 800-1500 m., Jan. 2, 1927, *Killip & A. C. Smith 16351* (G, NY).

VALLE: Naranjo, Río Dagua, April 1, 1876, *André 2499* (NY); wet cliffs, Cisneros, Dagua Valley, alt. 300-400 m., Sept. 21, 1922, *Killip 11439* (G, NY); thickets along Río Dagua, Cisneros, alt. 300-500 m., May 5, 1939, *Killip 35577* (G, US).


B. lutea
× 5
× 1
× 1
× 1/2
B. Lindleyana
× 1
× 5
× 1
× 5
× 1
× 1/6
B. stigmosa
× 1
× 1
× 5
× 1/6
B. nelumbiifolia
× 1
× 1/4
× 5
× 1

TAB. 2

NARIÑO: "Prov. de Pasto, Juanambú, alt. 1200 m., June 1853", *Triana (6)* (Col); Juanambú, alt. 1200 m., 1866, *Triana 3032* (Gen, phot. Macbride, CM no. 24191, type of *Begonia lanuginosa* A. DC.).

7. **Begonia (§ Magnusia) stigmosa** Lindl. Herbaceous; rhizome repent, to 12 cm. long, 1 cm. in diameter, coarsely lepidote, internodes very short and covered by the stipules; leaves oblique and strongly asymmetric, very broadly ovate or suborbicular, abruptly acuminate and usually with a second cusp more nearly opposite the petiole, cordate at base, 15-30 cm. long, scarcely it at all lobed, ciliate-denticulate, thin, glabrous above or with a few small white trichomes, the nerves beneath bearing trichomes like those on the petiole but smaller, petioles erect, to 38 cm. long, 4-10 mm. in diameter, covered with spreading to reflexed narrowly triangular lacerate pink scales 3-5 mm. long, stipules tardily deciduous, lanceolate, pilose, membranaceous, 15-20 mm. long; peduncle 2-5 dm. long (! Cuatrecasas), 7 mm. in diameter, soon glabrous; cymes bisexual, nearly regular, few- to many-flowered, 7-22 cm. long, lax, glabrous; bracts quickly deciduous, oblong, acute, fimbriate; pedicels slender, 7-23 mm. long; flowers white or pink; staminate tepals 2, suborbicular, cordate at base, 10-15 mm. long; stamens free, very numerous, filaments much longer than the broadly oblong anthers, connective apiculate-produced; bracteolae lacking; pistillate tepals 2 like the staminate or rarely a smaller one inside the others; ovary 3-celled, placentae bifid, ovuliferous throughout; styles bifid, the stigmatic tissue linear, spiral, continuous; capsule erect, broadly ovoid, 6-8 mm. long, wings very unequal, the largest oblong or subdolabriform, 10-15 mm. wide, the others narrowly marginiform.—Southern Mexico, Central America.—Lindl. in Bot. Reg. xxxi. misc. 32 (1845); A. DC. in DC. Prod. xv. pt. 1, 343 (1864). *B. squarrosa* sensu Seemann, Bot. Herald, 128 (1853), non Liebm., nomen. *Gireoudia stigmosa* Kl. in Monatsber. Berlin Akad. 125 (1854). Tab. 2.

MAGDALENA: Santa Marta, alt. 1200 m., 1898-1901, *H. H. Smith 1262* (NY, US, G); Vista de Nieve, Santa Marta Mountains, Dec. 18, 1922, *Viereck 8* (US); stream above Manaure, alt. ca. 800 m., Jan. 16, 1944, *O. Haught 3953* (US).

NORTE DE SANTANDER: bank of the Río Margua between Junín and Córdoba, region of Sarare, Cordillera Oriental, alt. 920-1240 m., Nov. 22, 1941, *Cuatrecasas 13375* (G).

8. **Begonia (§ Magnusia) nelumbiifolia** Schlecht. & Cham. Herbaceous; rhizome repent, short, 15 mm. thick, setose, internodes extremely short; leaves peltate, obliquely very broadly ovate or subelliptic, 7-9-nerved, evenly rounded except for the abruptly acuminate apex or slightly produced at the ends of the nerves, 17-40 cm. long, 10-28 cm. wide, remotely denticulate, soon glabrous, the margin ciliate and sometimes purple, thin, petioles 15-45 cm. long, to 8 mm. thick, sparsely rufous-hirsute, becoming glabrous, stipules persistent, lanceolate, over 2 cm. long, entire, rather firm, pilose; peduncle usually exceeding the leaves, to 66 cm. long, 6 mm. thick, soon glabrous; cyme regular, much branched, diffuse, 2-5 dm. broad; bracts deciduous, ovate, obtuse; pedicels slender, 9-22 mm. long; staminate tepals 2, suborbicular, 6-8 mm. long, white; stamens few, anthers narrowly obovate, equaling or longer than the filaments; pistillate bracteoles lacking; pistillate tepals 2, like the staminate; ovary 3-celled, placentae bifid, ovuliferous throughout, styles connate at base, distinctly divided, the stigmatic surface linear, spiral, continuous; capsule erect or somewhat nutant, broadly ovoid, 6-10 mm. long, wings very unequal, the largest ovate, obtuse, to 15 mm. wide, seeds ellipsoid, blunt.—Southern Mexico to Colombia.—Schlecht. & Cham. in Linnaea, v. 604 (1830); A. DC. in DC. Prod. xv. pt. 1, 343 (1864). *B. derycxiana* Lem. in Hortic. Univ. v. misc. 355 (1844). *Gireoudia nelumbiifolia* Kl. in Monatsber. Akad. Berlin, 125 (1854). *Begonia caudilimba* C. DC. in Smithson. Misc. Coll. lxix. no. 12, 9 (1919). Tab. 2.

BOLIVAR: bank in forest, Boca Verde, on Río Sinú, alt. 100-400 m., Mar. 4, 1918, *Pennell 4577* (NY, G).

9. **Begonia (§ Casparya) trispathulata** (A. DC.) Warb. Fruticose, possibly scandent; branches flexuous, glabrous; leaves strongly oblique and asymmetric, ovate or elliptic, abruptly acuminate, shallowly cordate at base, 10-11 cm. long, 5-6.5 cm. wide, penninerved, doubly serrate, setose-ciliate, ferruginous-puberulent on the nerves beneath, petiole 6-10 cm. long, glabrous, stipules deciduous, lanceolate, acuminate-setiferous, 18 mm. long, glabrous; peduncles axillary, few-flowered, shorter than the leaves; bracts ovate, obtuse, to 6 mm. long, 4 mm. wide, glabrous; outer staminate tepals broadly elliptic, 6-8 mm. long, glabrous, inner obovate, shorter; anthers longer than the filaments, obtuse with the connective scarcely produced; pistil-

late tepals 5, unequal; placentae bilamellate; capsule broadly turbinate, not produced at apex, dehiscing by the 3 angles, horns equal, flattened in a horizontal plane, subfoliaceous, obtuse or mucronulate, 10-12 mm. long.—Venezuela.—Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 146 (1894); Irmscher, loc. cit. ed. 2, xxi. 584 (1925). *Casparya trispathulata* A. DC. in Ann. Sci. Nat. ser. 4, xi. 117 (1859); in DC. Prod. xv. pt. 1, 271 (1864). Tab. 3.

"NOVA GRANATA", without further locality, ***Linden 1459*** (Kew, **type**; phot. Killip).

Our illustration of this species was made from Venezuelan material, *H. Pittier 10032*, and it is quite likely that the type also came from Venezuela, since Linden collected near the border. However, it is to be expected in Colombia even if the type locality should prove to be erroneous.

The horizontally flattened appendages in this and the following species and *B. Trapa* of Venezuela set them apart not only from the remainder of the section *Casparya* but from all other American species of *Begonia* as well.

10. **Begonia (§ Casparya) chlorolepis** Smith & Schubert, spec. nov., verisimiliter suffruticosa et metralis, ramis petiolis pedunculisque ferrugineo-puberulis; foliis fere rectis, valde asymmetricis, oblongo-ellipticis, abrupte acuminatis, basis latere prope axin rotundato, altero cuneato-decurrente, 10 cm. longis, 5 cm. latis, crenato-serrulatis, supra dissite setulosis, subtus ad nervos dense ferrugineo-setulosis, petiolo 10-25 mm. longo, stipulis persistentibus, subreniformibus, 15 mm. longis, firmis, viridibus, setulosis; pedunculis axillaribus, erectis, 4 cm. longis, femineis unifloris; inflorescentiis masculinis ramis 3-4 aequalibus compositis, ramis simplicibus, ad apicem versus dense florigeris, bracteis mox deciduis, ovatis vel ellipticis, obtusis, 5 mm. longis, membranaceis, glabris; tepalis masculinis 4, integris, glabris, exterioribus ellipticis, obtusis, 7 mm. longis, rubris, interioribus anguste obovatis, acutis, 5 mm. longis, albis; staminibus multis, in columna insertis, antheris anguste oblongis, quam filamentis bene longioribus, connectivo producto, acuminato, tepalis femineis 6, anguste ellipticis, obtusis, puberulis, exterioribus ex sicco rubris, subaequalibus, ad 18 mm. longis, interioribus pallidis, multo minoribus: stylis multifidis, ovario 3-partito, placentis bilamellatis, undique ovuliferis; capsula late turbinata, medio superne non producta, puberu-

la, cornubus 3, aequalibus, horizontaliter complanatis, ellipticis, erosis, 6-7 mm. longis. Tab. 3.

MAGDALENA: common in damp clearing near stream, Las Nubes, Santa Marta Mountains, alt. 1350 m., 1898-1901, *H. H. Smith 1268* (G, **type**; NY).

By its capsule, *B. chlorolepis* is evidently closely related to *B. trispathulata,* but it differs in all other details such as pubescence, leaf-form, stipules, inflorescence and tepals.

11. **Begonia (§ Casparya) Trianae** (A. DC.) Warb. Ferruginous-puberulent with at least the branches herbaceous; leaves transverse and strongly asymmetric, ovate, acute, shallowly cordate at base, 3-10 cm. long, 2-5 cm. wide, crenate-dentate, dark green above, paler beneath, petiole 12-32 mm. long, stipules tardily deciduous, ovate, obtuse, auricled, firm, 8-10 mm. long; peduncles axillary, 2.5-6 cm. long; staminate cymes densely few-flowered, pistillate 1-flowered; bracts deciduous, ovate, 8 mm. long, ciliate-serrulate, pilose; staminate tepals 4, the outer suborbicular, 6-8 mm. wide, ciliate-serrulate, pilose, the inner narrowly obovate, half as long, glabrous; anthers oblong, much longer than the filaments, the connective slightly produced, obtuse; pistillate tepals 5, obovate, acute, 6-8 mm. long, pubescent; styles much branched, the segments twisted with stigmatic papillae along the edge; placentae bilamellate; capsule broadly turbinate, truncate at apex, its horns subequal, flattened in a vertical plane, ovate, obtuse.—Endemic.—Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 146 (1894); Irmscher, loc. cit. ed. 2, xxi. 584 (1925). *Casparya Trianaei* A. DC. in Ann. Sci. Nat. ser. 4, xi. 117 (1859); in DC. Prod. xv. pt. 1, 271 (1864). Tab. 3.

NORTE DE SANTANDER: Páramo de Ramírez, prov. Ocaña, alt. 3000 m., Mar. 1853, *Schlim 1145* (Gen, phot. Macbride, CM no. 24209).

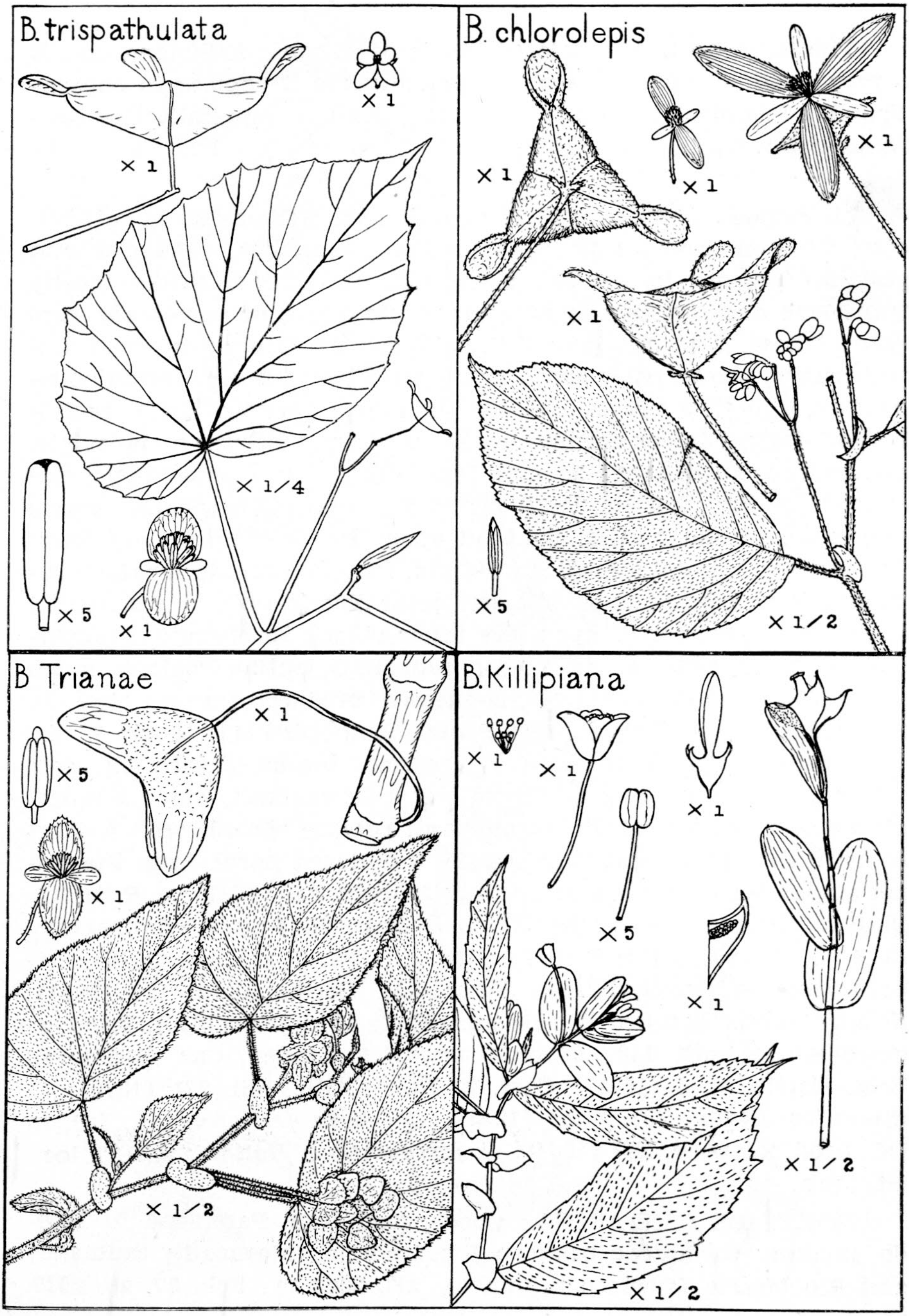
CUNDINAMARCA: Ubalá, alt. 1750 m., 1855, *Triana 3048* (British Museum, isotype; phot. Killip); "Prov. de Bogotá, Ubalá, 1750 m., *Triana (20)* (Col); Páramo de Guasca, eastern slope, Quebrada de Juiquín, Cordillera Oriental, alt. 2500 m., Aug. 27, 1941, *Cuatrecasas & Jaramillo 11990* (US).

It should be noted that the stem and leaves of *Begonia Trianae* are practically indistinguishable from those of *B. ferruginea.* We had no material to illustrate the pistillate tepals of *B. Trianae* and their description is drawn from A. De Candolle. The horns of this species are more wing-like than elsewhere in section *Casparya* but their uniformity and position at the top of the capsule indicate their true nature.

12. **Begonia (§ Casparya) Killipiana** Smith & Schubert, spec. nov., herbacea vel fruticosa, caulescens, erecta, ramosa, verisimiliter metralis vel ultra; caule glabro, rubro; foliis rectis, paulo asymmetricis, lanceolatis, abrupte acuminatis, basi subrotundatis, basis latere ab axi decurrente, 8-12 cm. longis, 3-5 cm. latis, crenato-serratis, supra dissite setulosis, subtus glabris vel ad nervos scaberulis; petiolo brevissimo, stipulis persistentibus, subreniformibus, 15-25 mm. longis, integris, firmis, fulgide rubris; pedunculis axillaribus, erectis, 15-40 mm. longis, gracilibus, glabris; inflorescentiis plurifloris, simplicibus, laxe racemosis, glabris; bracteis erectis, dense imbricatis, oblongo-ellipticis, obtusis, 20-45 mm. longis, fulgide scarlatinis; pedicellis ad 17 mm. longis; tepalis masculinis 4, liberis, integris, exterioribus ellipticis, obtusis, 6-8 mm. longis, scarlatinis vel apice aureis vel fere omnino albis, interioribus brevioribus, obcordatis, valde retusis, aureis vel albis; staminibus liberis, paucis, distincte biseriatis, aliis paulo aliis profunde inclusis, antheris quam filamentis bene brevioribus, late ellipticis, connectivo non producto, bracteolis femineis deciduis, ignotis; tepalis femineis verisimiliter 5 (e flore unico imperfecte cognitis), extremo elliptico, obtuso, 8 mm. longo, aliis gradatim brevioribus et in formam obcordatam mutatis; stylis 3, 4-partitis, segmentis ultimis linearibus, acutis; ovario 3-loculato, placentis simplicibus, anguste lanceolatis, capsula late turbinata, basi acuta, apice columna crasse cylindrica 6-8 mm. longa aucta, aequaliter 3-cornuta, cornubus acuminatis, leviter adscendentibus. Tab. 3.

CAUCA: western slopes, Andes of Popayán, alt. 2800-3000 m., *Lehmann 8250* (G, **type**); shrub-zone ("paramillo"), Mount "El Derrumbo" (= El Derrumbe), Cordillera Occidental, alt. 2500-2900 m., July 1, 1922, *Killip 7994* (G, NY); forest, "La Gallera", Micay Valley, Cordillera Occidental, alt. 2200-2600 m., July 1, 1922, *Killip 8004* (NY); Cordillera Occidental, Cerro de Munchique, western slope, bank of Río Tambito, alt. 2000-2500 m., July 16, 1939, *Pérez & Cuatrecasas 6235* (US).

It is a pleasure to name this species for Mr. Ellsworth P. Killip who has done so much in the flora of Colombia and who has been so generous in sharing his knowledge with others.

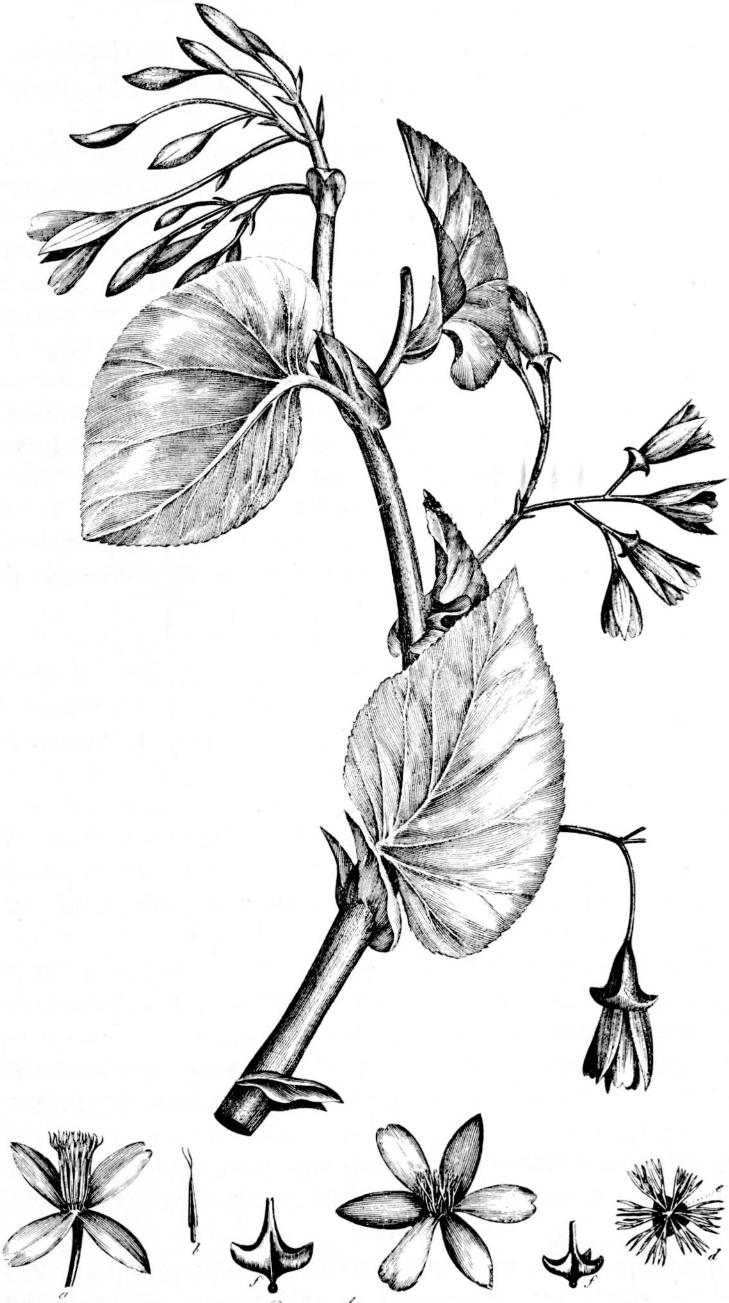

B. trispathulata
× 1
× 1
× 1/4
× 5
× 1
B. chlorolepis
× 1
× 1
× 1
× 1
× 5
× 1/2
B Trianae
× 1
× 5
× 1
× 1/2
B. Killipiana
× 1
× 1
× 1
× 5
× 1
× 1/2
× 1/2

TAB. 3

The large brilliantly colored bracts of *Begonia Killipiana* give it a very striking appearance which should make it popular in cultivation. Its technical characters are very unusual, especially the two-ranked stamens.

13. **Begonia (§ Casparya) ferruginea** L. f. Herbaceous to suffruticose, 0.6-4 m. high; stem soon glabrous, branches, peduncles and petioles sparsely to densely ferruginous-pubescent; leaves mostly transverse and strongly asymmetric, ovate, acute or acuminate, cordate at base, 7-13 cm. long, 5-7 cm. wide, dentate, dark green and scaberulous above, paler green or purplish beneath and ferruginous-pubescent on the nerves but soon glabrous between them, petiole 2-8 cm. long, stipules tardily deciduous, oblong, obtuse or apiculate, asymmetric, auricled, 12-25 mm. long, green, firm, scaberulous; peduncles axillary, 2-9 cm. long; cymes 2-4 times dichotomous; bracts deciduous, elliptic, obtuse, ciliate at apex, the lower ones 1 cm. long; flowers red; staminate pedicels 1-4 cm. long; staminate tepals 4, 20-30 mm. long, pilosulous outside, the outer oblong, obtuse or subacute, setose-serrulate toward apex, the inner oblong to obovate, subtruncate or emarginate; stamens free, numerous, anthers oblong, much longer than the filaments, the connective produced into an elongate seta; pistillate pedicels stouter, 5 mm. long; pistillate tepals 6, like the staminate, 15-35 mm. long; styles much branched with the erect linear segments bearing stigmatic tissue throughout, ovary 3-celled, placentae bifid, ovuliferous throughout; capsule obconic with a short column at apex, at maturity bearing 3 deflexed horns from the upper angles, tomentose.—Endemic.—L. f. Suppl. 419 (1781); J. E. Smith, Pl. Icon. Ined. ii. t. 44 (1790); Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 146 (1894); Irmscher, loc. cit. ed. 2, xxi. 584 (1925). *Stiradotheca ferruginea* Kl. in Monatsber. Berlin Akad. 127 (1854). *Stibadotheca magnifica* Kl. Begon. 129, t. 12, fig. A (1855). *S. ferruginea* Kl. loc. cit. 130. *Begonia magnifica* Linden, Cat. (1855); in Belg. Hortic. vi. 5 (1856); Carr. in Rev. Hortic. xlii. 271 (1870); C. Chevalier, Begon. 307, t. 53 (1938). *Casparya ferruginea* A. DC. in DC. Prod. xv. pt. 1, 269 (1864). *C. ferruginea β. Holtonis* A. DC. loc. cit. Tab. 4.

NORTE DE SANTANDER: woods, road from Pamplona to Toledo, crossing the divide between Río La Teja (Maracaibo drainage) and Río Mesme (Orinoco drainage), alt. 2800 m., Feb. 27, 28, 1927,



Begonia ferruginea Linn.

TAB. 4

Killip & A. C. Smith 19826 (G, NY, US); Páramo del Hatico, en route from Toledo to Pamplona, alt. ca. 2900 m., Mar. 12, 13, 1927, *Killip & A. C. Smith 20618* (G, NY).

CUNDINAMARCA: prov. Bogotá, *Triana 3026* (! A. DC.); near Bogotá, *Goudot 872* (! A. DC.); by the falls of Tequendama, Dec. 8-11, 1852, *Holton 712* (G, NY, Gen, phot. Macbride, CM no. 7319); Tequendama above Fusagasugá near Pandi, alt. 2200-2600 m., Feb. 2, 1883, *Lehmann 2581* (US); Páramos de Une, July 1916, *Dawe 379* (US); forest on slope of mountain 2-4 miles south of Sibaté, alt. 2900-3000 m., Oct. 13-15, 1917, *Pennell 2440* (G, NY, Mo, US); Bogotá, June 1919, *Ariste Joseph A346* (US); rain forest below El Peñón near Sibaté alt. 2700 m., Aug. 15, 1920. *Popenoe 1112* (US); Bogotá, 1925, *A. Schultze s. n.* (US); dense forest of La Hondonada, Salto de Tequendama, Cordillera Oriental, alt. 2250-2300 m., Oct. 2, 1938, *Cuatrecasas 201* (US); Macizo de Bogotá, Quebrada del Rosal alt. 3200 m., June 29, 1939, *Cuatrecasas 5709* (US); Finca Bethania, abajo de Peña Negra, Municipio de Anolaima, alt. 2700 m., May 29, 1941, *H. García B. & Jaramillo 10419* (G).

TOLIMA: Aguadita, Jan. 27, 1938, *L. Javier 21* (US).

BOYACA: Cordilera of Tunja, *Warsczewicz s. n.* (! A. DC.); Yanacá, Maripí, July 21, 1936, *H. García B. 4852* (US); Cordillera Oriental, Quebrada de Susacón, alt. 3100-3300 m., July 17, 1940, *Cuatrecasas & H. García B. 9809* (US).

DEPARTMENT UNKNOWN: "in Nova Granada", *Mutis* (Linnean Herbarium, type, phot. Arnold Arboretum no. 1125.1); *Linden 1224* (! A. DC.); "Colombia", *Triana 196* (! A. DC.); *Holton 722* (NY, Kew, type of *Casparya ferruginea* var. *Holtonis* A. DC.); Casanare, *Christianos 18* (NY).

We reproduce here the plate of J. E. Smith, which is the earliest illustration of the species. It is fairly accurate except that it shows two appendages above the anther instead of one.

This species was in cultivation at an early date and evidently was popular, but according to Chevalier it has now disappeared.

Var. **dilatata** Smith & Schubert, var. nov., tepalis masculinis interioribus valde dilatatis, late ellipticis, quam exterioribus multo latioribus.

CUNDINAMARCA: Falls of Tequendama, alt. 2480 m., Feb. 3, 1876, *André 1320* (NY, not so extreme as the type); wet forested bank along road from San Miguel to Aguadita, Eastern Cordillera, alt. 2680 m., April 30, 1944, *Killip 38095* (G, **type**; US).

14. **Begonia (§ Casparya) gamolepis** Smith & Schubert, spec. nov., fruticosa, erecta vel subprostrata, 3-15 dm. alta; ramis gracilibus, puberulis; foliis rectis, asymmetricis, subellipticis, breviter acuminatis, basi dimidiatis, 4-6 cm. longis, 2-3 cm. latis, serratis, supra et ad nervos subtus hirsutis, petiolo 7-10 mm. longo, fusco-hirtello, stipulis deciduis, oblongis, 6-8 mm. longis, integris; pedunculis axillaribus, gracilibus, 1-4 cm. longis; inflorescentiis bisexualibus, e floribus masculinis 3-4 et femineo unico formatis, bracteis deciduis, ellipticis, plus minusve coalitis, 8 mm. longis, inflorescentiam juvenilem involucrantibus, integris, glabris; pedicellis masculinis ad 13 mm. longis; tepalis masculinis 2, orbicularibus, basi cordatis, 8 mm. longis, integris, carnosis, glabris, viridibus vel albis (! Killip & A. C. Smith); staminibus multis, antheris oblongis, quam filamentis multo longioribus, connectivo producto, obtuso; floribus femineis perjuvenilibus solum cognitis; tepalis femineis 5, inaequalibus, apice fimbriato-laceratis, extus hirsutis; placentis bilamellatis; capsula turbinata, aequaliter 3-cornuta, cornubus gracilibus, sursum curvatis, apice hirsutis, columna crasse conica, 6 mm. alta. Tab. 5.

SANTANDER: Eastern Cordillera, dense woods along stream, vicinity of Las Vegas, alt. 2600-3000 m., Dec. 21-23, 1926, *Killip & A. C. Smith 16037* (G, NY, US); forest, vicinity of Charta, alt. 2000-2600 m., Feb. 1-11, 1927, *Killip & A. C. Smith 18914* (G, NY, US); dense wet woods, western slope of Mount San Vicente, near Charta, alt. 2500-2700 m., Feb. 9, 1927, *Killip & A. C. Smith 18974* (G, NY, US); dense woods, southern slope of Mount San Martín, near Charta, alt. 2300-2500 m., *Killip & A. C. Smith 19137* (NY, **type**; G, US).

This species is unique in *Casparya* in having only two staminate tepals which are quite fleshy. The name alludes to the involucre of connate bracts at the base of the inflorescence.

15. **Begonia (§ Casparya) umbellata** HBK. Herbaceous or suffruticose; branches glabrous; leaves straight or oblique, strongly asymmetric, ovate, acuminate, unequally cordate at base with one lobe much larger than the other or slightly dimidiate, 5-7 cm. long, 2.5-5 cm. wide, densely setose-serrate, very sparsely setose above, hirtellous on the nerves beneath, petiole 1-5 cm. long, hirtellous to glabrous,

stipules tardily deciduous, oblong-elliptic, obtuse, entire, 10-18 mm. long, soon glabrous, brown, membranaceous; peduncles axillary, 4-7 cm. long, the pistillate 1-flowered; staminate cymes flat and umbelliform, 2-20-flowered, glabrous; bracts deciduous, elliptic or obovate, 4-6 mm. long, entire, thin, brown; pedicels very slender, up to 6 cm. long; staminate tepals 4, subequal, 12-20 mm. long, red, the outer elliptic obtuse, pilose and more or less serrulate at least toward apex, the inner obovate, broader, lacerate-serrate at apex, paler; stamens free, included, up to 20, anthers oblong, obtuse, several times shorter than the filaments; pistillate bracts like the others; pistillate tepals 6, the outer 3 slightly longer and narrower, to 28 mm. long, the inner lacerate-serrate at apex; styles much branched, the branches linear and covered with stigmatic papillae, ovary 3-celled, placentae bifid, ovuliferous throughout; capsule clavate-turbinate, bearing 3 slightly ascending horns from the upper angles and a short column at apex, setose, becoming glabrous.—Endemic.—HBK. Nov. Gen. & Sp. vii, 187 (1825); Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 146 (1894); Irmscher, loc. cit. ed. 2, xxi. 584, fig. 259 (1925). *Isopteris umbellata* Kl. in Monatsber. Berlin Akad. 127 (1854). *Isopteryx umbellata* Kl. Begon. 132, t. 12, fig. B (1855). *Casparya umbellata* A. DC. in DC. Prod. xv. pt. 1, 270 (1864). Tab. 5.

TOLIMA: Mt. Tolima near tree-line, *Goudot s. n.* (! A. DC.); prov. Mariquita, *Triana 3033* (! A. DC.); La Ceja (Quindío), prov. Mariquita, alt. 2800 m., 1851-7, *Triana s. n.* (NY); Volcancito, Jan. 26, 1853, *Holton 720* (G, NY); San Juan (?), Quindío, Mar. 1876, *André 2195* (NY); wet cliffs at cascade, "La Lora" to summit, new Quindío trail, Cordillera Central, Aug. 14, 1922, *Killip 9773* (G, NY, US); in open, along Quindío Highway, between Cajamarca and summit of Divide, alt. 3200 m., Mar. 27, 28, 1939, *Killip & Varela 34565* (US) along divide near Quindío Highway, alt. 3300-3500 m., Mar. 27, 1939, *Killip & Varela 34621* (US).

CALDAS: "Crescit in declivitate occidentali Andium quinduensium, prope El Inciensal, alt. 240 hex.", (ca. 470 m.) (*). Sept. 1801, *Humboldt & Bonpland s. n.* (**type**, Paris, not seen); Páramo del Ruiz, alt. 2500-3000 m., Sept. 1883, *Lehmann 3091* (US); "Magana" to Quindío Pass, old Quindío trail, Cordillera Central, alt. 3200-3500 m., Aug.

(*) The altitude of 240 hexapedes (= 467 meters) given for El Inciensal is wrong. The proper altitude is about 2300 meters.—EDITOR.

2, 1922, *Killip & Hazen 9165* (G, NY, US); stream-margin, edge of forest, "Pinares", above Salento, Cordillera Central alt. 2700-2900 m., Aug. 2-10, 1922, *Pennell 9338, 9355* (G, NY, US); mossy forest on spur, Cerro Tatamá, Cordillera Occidental, alt. 2800-3300 m., Sept. 8-10, 1922, *Pennell 10453, 10454* (NY); on rock, Quindío-"La Lima" (= La Línea), alt. 3000-3200 m., Feb. 1937, *E. Dryander s. n.* (US).

CAUCA: upper forest zone, Páramo de Buena Vista, Huila Group, Central Cordillera, alt. 3000-3600 m., Jan. 1906, *H. Pittier 1179* (US, type of *B. fissisepala* C. DC.).

DEPARTMENT UNKNOWN: 1851-7, *Triana s. n.* (US); *Linden 388* (! A. DC.).

The specific name refers to the form of the staminate inflorescence. However, the inflorescence is not a true umbel, but a cyme with some branches greatly abbreviated.

16. **Begonia (§ Casparya) cornuta** Smith & Schubert, spec. nov., suffruticosa, ad 3 m. alta (! H. García B. & Jaramillo); ramis glabris; foliis transversis vel valde obliquis, anguste ovatis, acuminatis, basi cordatis, ad 9 cm. longis, 4 cm. latis, acute serratis, supra glabris, subtus ad nervos setulosis, petiolo 2-5 cm. longo, glabro, stipulis mox deciduis, ignotis; pedunculis, robustis, 25-75 mm. longis; cymis multifloris, ultra 2 dm. diametro, glabris, bracteis mox deci- paulo producto, obtuso; bracteolis femineis late obovatis, 6 mm. longis, tepalis masculinis 4, integris, albis vel pallide purpurascentibus, exterioribus late ellipticis vel suborbicularibus, 9-11 mm. longis, interioribus anguste obovatis, 6 mm. longis; staminibus liberis, ca. 20, antheris oblongis, quam filamentis subduplo longioribus, connectivo paulo producto, obtuso; bracteolis femineis late obovatis, 6 mm. longis, integris, glabris; tepalis femineis 5, subaequalibus, late ellipticis, 15 mm. longis, ad apicem versus ciliato-serratis; stylis 3, 6-partitis, segmentis ultimis brevibus, oblongis; ovario 3-loculato, placentis bilamellatis, undique ovuliferis; capsula late turbinata, apice columna brevissima aucta, aequaliter 3-cornuta, cornubus gracilibus, acuminatis, leviter adscendentibus. Tab. 5.

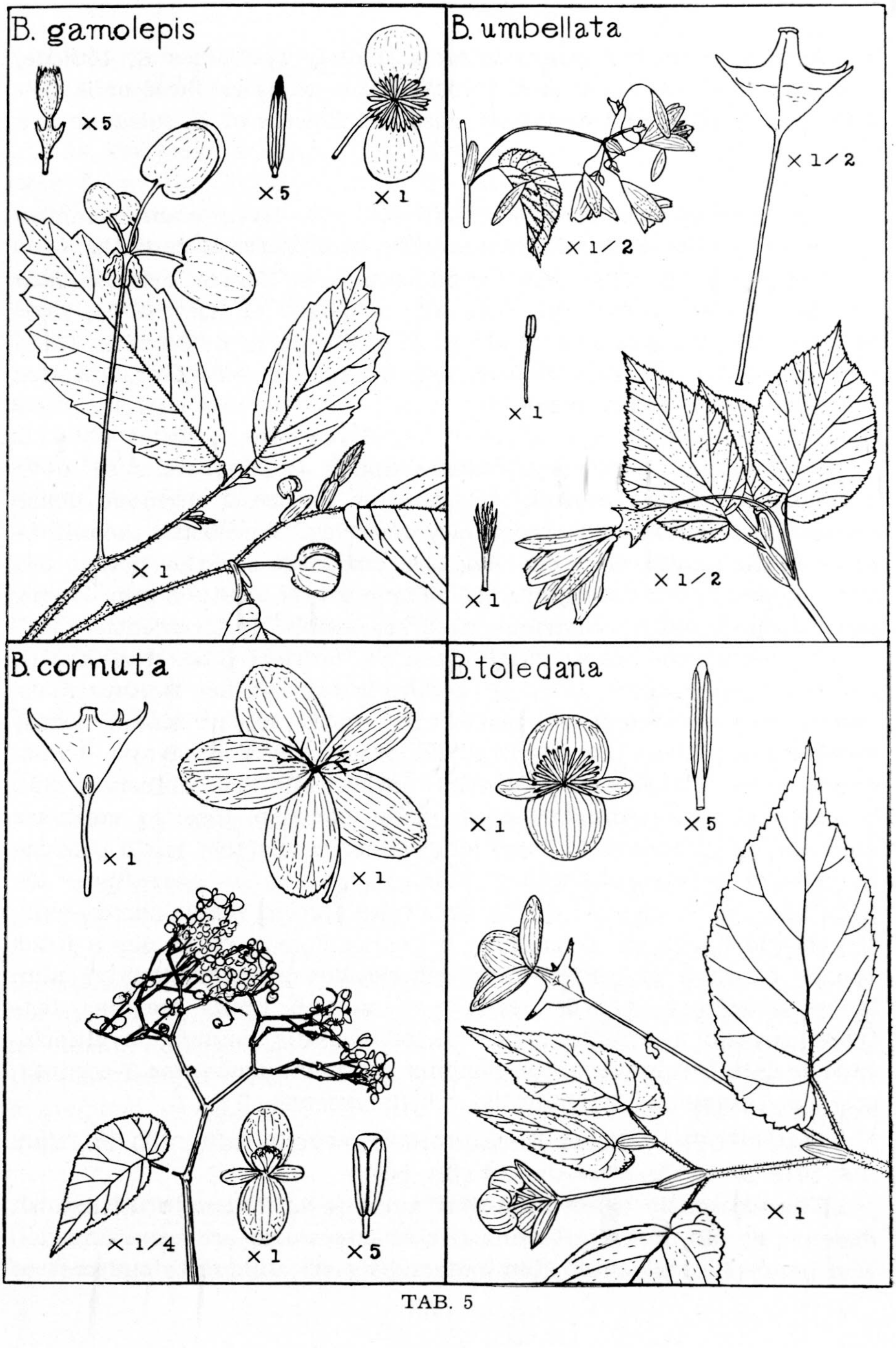
CUNDINAMARCA: beyond "Cibaté" (= Sibaté), Jan. 3, 1854, *Holton s. n.* (NY); Aguadita near Barroblanco, Feb. 4, 1876, *André 1425* (NY); forest, El Peñón, southwest of Sibaté, alt. 2800-2900 m., Oct. 13, 1917, *Pennell 2414* (NY); San Miguel, extreme southern end of the savanna of Bogotá, hills, alt. 2840 m., Aug. 15, 1939, *Cuatreca-*

sas 6677 (US, **type**); Municipio de Facatativá, Alto de Peña Negra, Cordillera Oriental, western slope, alt. 2810-2820 m., May 29, 1941, *H. García B. & Jaramillo 10407* (US).

Its ample many-flowered inflorescence serves to distinguish *B. cornuta* from the remainder of *Casparya*. In fact, specimens without pistillate flowers are all too easily confused with other sections. It is an interesting commentary that *B. cornuta* was collected five times over a period of more than ninety years without having been described.

17. **Begonia (§ Casparya) toledana** Smith & Schubert, spec. nov., herbacea, erecta diffusaque, 6-9 dm. alta; ramis gracilibus, junioribus plus minusve puberulis; foliis plerumque obliquis, ovatis, acuminatis, basi cordatis, 5-7 cm. longis, 2-3.6 cm. latis, serratis, supra et ad nervos subtus sparse puberulis, petiolo 1-4 cm. longo, stipulis deciduis, oblongis, 8-12 mm. longis, integris; pedunculis axillaribus, gracilibus, ad 36 mm. longis; inflorescentiis verisimiliter unisexualibus, paucifloris, bracteis deciduis, ellipticis, integris, basalibus ad 7 mm. longis; pedicellis 10-12 mm. longis; tepalis masculinis 4, integris, albis, glabris, exterioribus suborbicularibus, ad 10 mm. longis, interioribus anguste ellipticis, minoribus; staminibus multis, antheris oblongis, filamentis brevissimis, connectivo producto, obtuso; bracteolis femineis verisimiliter nullis; tepalis femineis 5, paulo inaequalibus, ellipticis, obtusis, integris, ad 20 mm. longis, albis glabris; styli 3, multo connatis, multifidis; ovario turbinato, aequaliter 3-cornuto, cornubus gracilibus, sursum curvatis, acuminatis, placentis bilamellatis; capsula ignota. Tab. 5.

NORTE DE SANTANDER: Eastern Cordillera, dense woods, road from Pamplona to Toledo, crossing the divide between Río La Teja (Maracaibo drainage) and Río Mesme (Orinoco drainage), alt. 2800-3000 m., Feb. 27-28, 1927, *Killip & A. C. Smith 19981* (G, NY, US); dense woods, Pica-Pica Valley, above Tapatá (north of Toledo), alt. 2100-2400 m., Mar. 1-5, 1927, *Killip & A. C. Smith 20270* (G); woods along stream, Loso and vicinity (north of Toledo), alt. 2200-2400 m., Mar. 6-7, 1927, *Killip & A. C. Smith 20359* (G, **type**; NY, US); edge of woods, western slope of Páramo del Hatico, en route from Toledo to Pamplona, alt. 2800-2900 m., Mar. 13, 1927, *Killip & A. C. Smith 20726* (G, NY, US).


B. gamolepis
×5
×5
×1
×1
B. umbellata
×1/2
×1/2
×1
×1
×1/2
B. cornuta
×1
×1
×1/4
×1
×5
B. toledana
×1
×5
×1

TAB. 5

At first glance, *Begonia toledana* closely resembles *B. Urticae*, but it has oblique leaves with cordate bases, whereas those of *B. Urticae* are straight and dimidiate. Also the flowers of *B. toledana* are much larger.

Var. **erubescens** Smith & Schubert, var. nov., planta omnino erubescens; foliis lanceolatis, acuminatis, basi profunde cordatis.

NORTE DE SANTANDER: woods, region of Sarare, between Alto del Loro and Alto de Santa Inés, alt. 1800-2200 m., Oct. 18-21, 1941, *Cuatrecasas, Schultes & E. Smith 12492* (US); Hoya de Samaria (Municipio Toledo), alt. 2000-2100 m., Oct. 30, 1941, *Cuatrecasas, Schultes & E. Smith 12772* (US, **type**).

18. **Begonia (§ Casparya) ursina** Smith & Schubert, spec. nov., e fragmentis solum cognita, verisimiliter fruticosa, utrinque dense ferrugineo-hirsuta; foliis rectis, asymmetricis, lanceolatis, acuminatis, basi dimidiatis, ad 5 cm. longis, 2 cm. latis, serratis, petiolo 3-5 mm. longo, stipulis persistentibus, oblique ovatis, acutis 6 mm. longis, serratis; pedunculis axillaribus, ad 2 cm. longis; inflorescentiis masculinis densissime paucifloris; femineis unifloris; bracteis ovatis, acutis, 10 mm. longis, integris; pedicellis brevissimis; floribus masculinis crasse ovoideis vel subglobosis, acutis, nucem simulantibus; tepalis masculinis 4, exterioribus semiovoideis, basi excavatis, 6 mm. longis dense ferrugineo-hirsutis, interioribus ellipticis, obtusis, 2 mm. longis, glabris; staminibus toro paulo convexo insertis, antheris oblongis, quam filamentis bene longioribus, connectivo paulo producto, obtuso; bracteolis femineis bracteas masculinas aequalibus; tepalis femineis 6, anguste ovatis, acutis, ad apicem versus ciliato-seratis, exterioribus 3, subaequalibus, 9-12 mm. longis, extus dense intus sparse hirsutis, ex sicco fuscis, interioribus subaequalibus, 7 mm. longis, subglabris, albidis; stylis multiramosis, ramis brevibus, tortuosis; ovario 3-loculato, placentis bilamellatis, undique ovuliferis; capsula late turbinata, apice columna subnulla, aequaliter 3-cornuta, cornubus gracilibus, acuminatis, sursum curvatis. Tab. 6.

MAGDALENA: Cerro Pintado, Sierra Perijá, alt. 3100 m., July 3-6, 1942, *M. A. Carriker, Jr., 25* (US, **type**).

The extremely dense indument alone is sufficient to distinguish *Begonia ursina*, but the technical characters also are most unusual. The hemispherical outer staminate tepals are unique to the best of our knowledge, and the regularly biseriate character of the pistillate tepals is quite rare.

19. **Begonia (§ Casparya) grewiaefolia** (A. DC.) Warb. Suffruticose, decumbent and rooting at the nodes; branches erect, 15-30 cm. long, fuscous-tomentose, becoming glabrous toward base; leaves straight or slightly oblique, strongly asymmetric, oblong-ovate to oblong-obovate, acuminate, unequally cordate at base, 2-8 cm. long, 1-4 cm. wide, 7-8 pinnate nerves on each side, doubly serrate, setose-ciliate, sparsely setose above and on the nerves beneath, petioles 2-6 mm. long, stipules ovate, acute or obtuse, 6 mm. long, entire, soon glabrous; peduncles axillary, 2-4 cm. long, 1-flowered; bracts elliptic, deciduous; pedicels short; flowers rose; staminate tepals 4, subequal, obovate, 14 mm. long, entire, glabrous; anthers unequal, slender, longer than the filaments, the connective produced, acute; pistillate bracteoles like the bracts, obtuse, 6 mm. long, 4 mm. wide, glabrous; pistillate tepals 5-6, obovate-oblong, 10-12 mm. long, entire, glabrous; styles 6-parted, the ultimate branches inflexed, neither slender nor twisted, ovary pilose; capsule broadly turbinate, obtuse at base, 6 mm. high, bearing 3 narrowly triangular subascending horns from the angles, apical column 2 mm. high.—Ecuador, Perú (?).—Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 146 (1894); Irmscher, loc. cit. ed. 2, xxi. 584 (1925). *Casparya grewiaefolia* A. DC. in Ann. Sci. Nat. ser. 4, xi. 117 (1859); in DC. Prod. xv. pt. 1, 271 (1864).

CALDAS: Manizales, alt. 2150 m., Feb. 1853, *Triana 3055* (British Museum, phot. Killip).

VALLE: prov. Buenaventura, *Triana 3056* (! A. DC.).

DEPARTMENT UNKNOWN: *Linden 392* (! A. DC.).

Our knowledge of *Begonia grewiaefolia* is unsatisfactory, since the Colombian material was only tentatively associated with the Ecuadorian type by A. De Candolle and we have only photographs of poor specimens for examination. We have not illustrated this species since the photographs disclose practically nothing of its habit which would distinguish it from the following one and the technical characters indicated in the description are not observable.

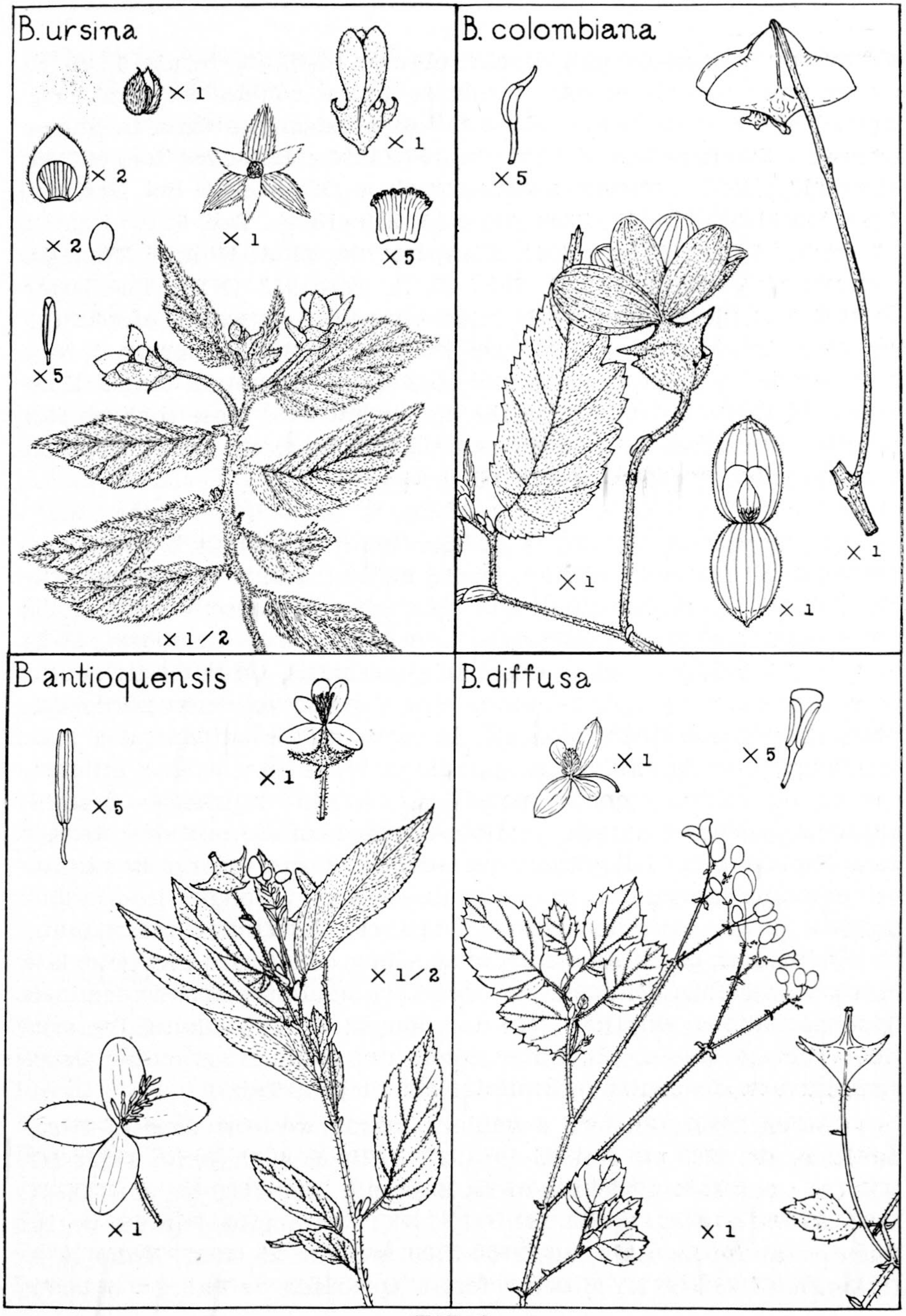
20. **Begonia (§ Casparya) colombiana** Smith & Schubert, spec. nov., e fragmentis solum cognita, herbacea vel suffruticosa, verisimiliter metralis; ramis junioribus sparse puberulis; foliis rectis, asym-

metricis, ellipticis, acuminatis, basi breviter et valde inaequaliter cordatis, ad 6.5 cm. longis et 3 cm. latis, grosse duplicato-serratis, breviter setoso-ciliatis, supra dissite et subtus ad nervos strigosis, petiolis ad 9 mm. longis, puberulis; stipulis deciduis, late ovatis vel ellipticis, apice rotundatis et setoso-mucronatis, 3-4 mm. longis, integris, membranaceis, glabris; pedunculis axillaribus, 15-25 mm. longis, puberulis; inflorescentiis bisexualibus, dense racemosis, paucifloris; bracteis suborbicularibus, grosse serratis, membranaceis, sparse puberulis, fulgide rubris; pedicellis brevibus; tepalis masculinis 4, valde inaequalibus, integris, fulgide rubris, exterioribus late ellipticis apiculatisque, 14 mm. longis, extus puberulis, interioribus obovatis, subduplo brevioribus; staminibus paucis, liberis, profunde inclusis, antheris oblongis, cum filamentis subaequalibus, connectivo valde producto, acuto; bracteolis femineis bracteas simulantibus sed densiore puberulis, ovarium fere occultantibus; tepalis femineis 6, subaequalibus, ellipticis, obtusis, integris, 14-15 mm. longis, fulgide rubris, puberulis; stylis multifidis, ovario puberulo, placentis bilamellatis; capsula late turbinata, 3-cornuta, cornubus acuminatis, deciduis, columna 3 mm. longa. Tab. 6.

PUTUMAYO: eastern slope of the Cordillera, between El Silencio and La Cabaña (road from Sibundoy to Urcusique), alt. 2200-2400 m., Dec. 31, 1940, *Cuatrecasas 11517* (US, **type**; G).

We have described *Begonia colombiana* as a new species with a certain hesitation because it is obviously so close to the poorly understood *B. grewiaefolia,* but it has very unequal staminate tepals and suborbicular bracts and bracteoles which are sufficient distinction if *B. grewiaefolia* has been described correctly.

21. **Begonia (§ Casparya) antioquensis** (A. DC.) Warb. Fruticose; branches fulvous-pubescent, becoming glabrous; leaves straight or slightly oblique, strongly asymmetric, lance-elliptic, penninerved, acute or acuminate, unequal at base with the adaxial side cuneate and the other rounded and attached further down the petiole, 25-75 mm. long, 12-26 mm. wide, doubly serrate, sparsely pilose on both sides, petiole 4-6 mm. long, pilose, stipules subpersistent, ovate, acute, pilose, 6-8 mm. long, 2-4 mm. wide; peduncles erect, to 5 cm. long, pubescent, few-flowered; bracts deciduous, ovate, obtuse, pilose, 4-6 mm. long; flowers red or rose; staminate tepals 4, equal, 12 mm. long, entire, the outer ovate, puberulent, the inner obovate; anthers nu-


B. ursina
× 1
× 1
× 2
× 1
× 2
× 5
× 5
× 1/2
B. colombiana
× 5
× 1
× 1
× 1
B antioquensis
× 5
× 1
× 1/2
× 1
B. diffusa
× 1
× 5
× 1

TAB. 6

merous on a long column, linear, obtuse; pistillate tepals 5, up to 6 mm. long; capsule broadly turbinate, apical column 6-8 mm. long, conical, the 3 acute horns subascending.—Endemic.—Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 146 (1894); Irmscher, loc. cit. ed. 2, xxi. 584 (1925). *Casparya antioquensis* A. DC. in Ann. Sci. Nat. ser. 4, xi. 116 (1859); in DC. Prod. xv. pt. 1, 270 (1864). Tab. 6.

ANTIOQUIA: *Triana 3041* (Kew, isotype; phot. Killip); Tamesis, vicinity of Medellín, Feb. 1, 1928, *R. A. Toro 982* (NY). The latter specimen it placed here with some uncertainty because of our incomplete knowledge of the type. Its long staminal column is not noted in the type-description and its capsule column is longer than indicated there, but otherwise the agreement is so close that we feel justified in calling the two the same. From necessity the illustration is taken from the Toro specimen.

22. **Begonia (§ Casparya) diffusa** Smith & Schubert, spec. nov., herbacea vel fruticosa, diffusa, 0.3-3.5 m. alta; ramis patentibus, gracilibus, pilis rubris articulatisque plus minusve dense vestitis; foliis rectis, asymmetricis, subellipticis, late acutis, basi dimidiatis, 18-34 mm. longis, 7-20 mm. latis, grosse ciliato-serratis, supra dissite subtus ad nervos pilosis, petiolo 3-18 mm. longo, sparse vel dense piloso, stipulis subpersistentibus, oblongis, integris, apice setiferis, 4-5 mm. longis; pedunculis axillaribus, gracilibus, 14-42 mm. longis; inflorescentiis masculinis cymosis, paucifloris vel submultifloris; bracteis ellipticis, parvis, fimbriatis; inflorescentia feminea uniflora; tepalis masculinis 4, albis vel rubris, plus minusve pilosis, exterioribus ovatis vel ellipticis, apiculatis, basi cordatis, 4-6 mm. longis, interioribus obovatis, brevioribus; staminibus subpaucis in columna insertis, antheris oblongis, quam filamentis longioribus, connectivo producto, late obtuso; bracteolis femineis cum bracteis similibus; tepalis femineis 5, subaequalibus, ellipticis, 9-14 mm. longis; stylis 3, multifidis; ovario turbinato, piloso, aequaliter 3-cornuto, cornubus gracilibus, sursum curvatis, placentis verisimiliter simplicibus. Tab. 6.

SANTANDER: Eastern Cordillera, woods, western slope of Páramo Rico, alt. 3200 m., Jan. 15-19, 1927, *Killip & A. C. Smith 17852* (G, NY, US); oak forest, vicinity of La Baja, alt. 2700-3500 m., Jan. 14-31, 1927, *Killip & A. C. Smith 18107* (G, NY); paramillo, Páramo de las Puentes, above La Baja, alt. 3500-3700 m., Jan. 25, 1927, *Killip & A. C. Smith 18178* (G, NY); dense forest, Quebrada de Pais (= Páez?), north of La Baja, alt. ca. 3200 m., Jan. 31, 1927, *Killip & A. C. Smith 18772* (NY, **type**; G, US).

Begonia diffusa is much like the Venezuelan *B. montana* except for the staminate flowers which are much smaller and more numerous and are borne in a separate inflorescence. The combination of diffuse habit and very small leaves readily distinguishes it from other Colombian species of *Casparya.*

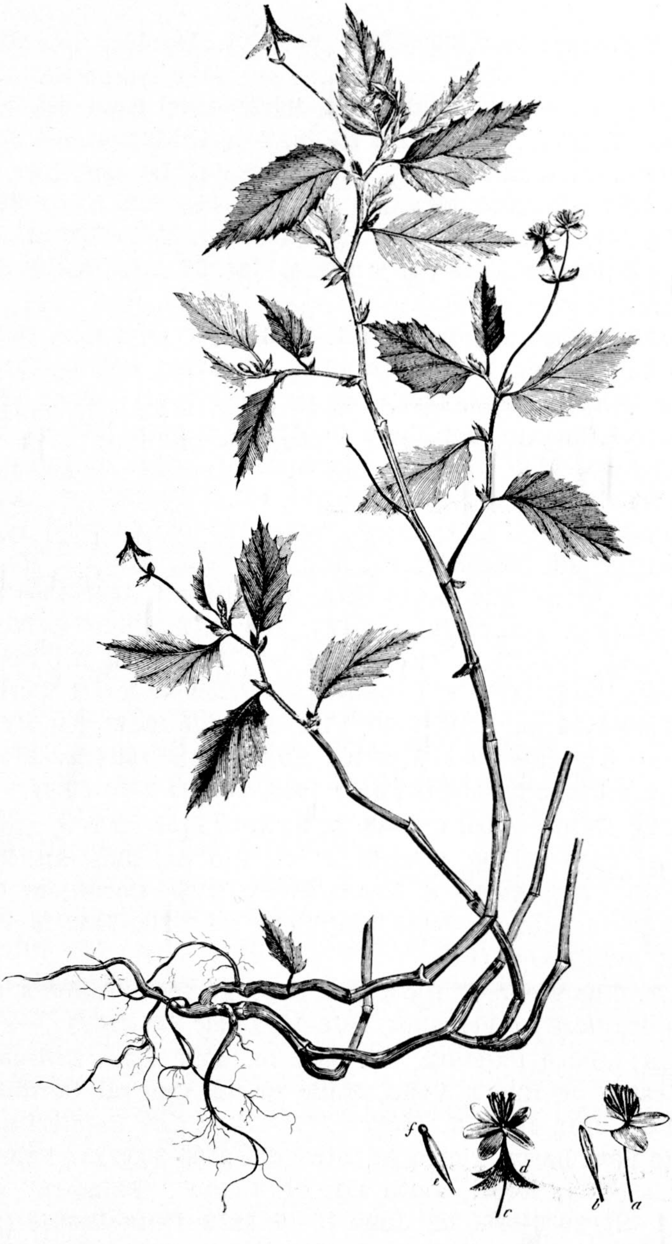
23. **Begonia (§ Casparya) Urticae** L. f. Herbaceous to suffruticose; stem branching, decumbent, rooting at the nodes, 15-40 cm. high, rarely over 2 m. (! Dryander), the younger parts usually ferruginous-puberulent; leaves straight or nearly so, srongly asymmetric, ovate or elliptic, acute or acuminate, base acute on the adaxial side, obtuse and decurrent on the other, 3-8 cm. long, penninerved, doubly serrate, ciliate, sparsely hirtellous to glabrous above, densely pubescent on the nerves to wholly glabrous beneath, petiole 2-15 mm. long, stipules deciduous, ovate, obtuse, setose, 2-6 (rarely to 12) mm. long; peduncles axillary, erect, 12-45 mm. long, 1-few-flowered; bracts deciduous, elliptic, setaceous-dentate at apex; pedicels 6-18 mm. long; staminate tepals 4, subequal, 3-8 mm. long, the outer elliptic, entire, red, often pilose, the inner obovate, white; stamens on a slender colum 2 mm. high, filaments short, anther linear, the connective slightly produced; pistillate bracteolae deciduous, elliptic; pistillate tepals 5, subequal, elliptic, 3-5 mm. long, entire, red or white, the outer often pilose; styles 3 with many short branches wholly covered by stigmatic papillae, placentae bilamellate, ovuliferous on all sides; capsule very variable, broadly turbinate, obtuse at base, with 3 ascending horns on the angles, the tips of the horns often deciduous, the apical column well developed, angled or terete, slender, conical or cylindric or subclavate, from longer than the wings to rarely shorter.—Costa Rica, Panama, Ecuador, Perú.—L. f. Suppl. 420 (1781); Warb. in Engler & Prantl, Pflanzenfam. iii. Abt. 6a, 146 (1894); Irmscher in Engler & Prantl, Pflanzenfam. ed. 2, xxi. 584 (1925). *B. urticaefolia* J. E. Smith, Pl. Icon. Ined. ii. t. 45 (1790), pro errore. *B. columnaris* Benth. Pl. Hartweg. 131 (1844); Warb. loc. cit.; Irmscher, loc. cit. *B. trachyptera* Benth. op. cit. 184 (1845); Warb. loc. cit.; Irmscher, loc. cit. *Stiradotheca trachyptera* Kl. in Monatsber. Berlin Akad. 127 (1854). *Casparya coccinea* Kl. loc. cit. e. p., nomen; Begon. 128 (1855). *Begonia coccinea* Ruiz ex Kl. in Monatsber. Berlin Akad. 127 (1854) e. p.,

nomen in synon. *Sassea Urticae* Kl. op. cit. 128; Begon. 133 (1855). *S. columnaris* Kl. in Monatsber. Berlin Akad. 128 (1854); Begon. 134 (1855). *S. glabra* Kl. in Monatsber. Berlin Akad. 128 (1854); Begon. 134 (1855). *Begonia glabra* Ruiz ex Kl. in Monatsber. Berlin Akad. 128 (1854), nomen in synon. *Stibadotheca trachyptera* Kl. Begon. 131 (1855). *Begonia cucullata* Ruiz ex Kl. Begon. 134 (1855), nomen in synon. *Casparya trachyptera* A. DC. in DC. Prod. xv. pt. 1, 274 (1864). *C. columnaris* A. DC. loc. cit., non Kl. (1854). *C. columnaris* β *glabra* A. DC. loc. cit. *C. Urticae* A. DC. loc. cit. *C. Urticae* β *hispida* A. DC. loc. cit. *Sassea Hoffmanniana* Kl. ex A. DC. op. cit. 275, nomen in synon. *Begonia monticola* C. DC. in Bull. Herb. Boiss. ser. 2, viii. 325 (1908). *B. Torresii* Standl. in Journ. Wash. Acad. Sci. xvii. 313 (1927). *B. chiriquensis* Standl. in Woodson & Schery in Ann. Mo. Bot. Gard. xxvii. 321 (1940). *B. columnaris* var. *glabra* Smith & Schubert in Macbride, Fl. Perú, in Field Mus. Pub. Bot. xiii. pt. 4, 187 (1941). Tab. 7.

BOLIVAR: forest, Cascada Chorrón, south of Antizales, alt. 1800-2500 m., Feb. 25, 1918, *Pennel 4411* (NY).

ANTIOQUIA: Támesis, Feb. 1, 1928, *R. A. Toro 968* (NY); Páramo de Sonsón, alt. 2700-2850 m., Jan. 26, 1945, *Daniel 3426* (US).

CUNDINAMARCA: mountains east of Bogotá, *Holton 723* (NY); in mountains near Bogotá, Oct. 1852, *Holton 727* (G, NY); Boquerón de Monserrate, alt. 2700 m., Sept. 1853, *Triana (10)* (Col); Boquerón de Bogotá, Jan. 26, 1876, *André 1303* (NY); Viotá, Feb. 1876, *André K. 1070* (G); Bogotá, Jan. 1916, *Dawe 2* (US); moist cliff, Río San Francisco above Bogotá, alt. 2700-2800 m., Sept. 13, 1917, *Pennell 1926* (G, Mo, NY, US); forest, El Peñón southwest of Sibaté, alt. 2800-2900 m., Oct. 13, 1917, *Pennell 2413, 2421* (NY); Boquerón, Bogotá, alt. 2800-2900 m., Feb. 1925, *A. Schultze 136* (US); no further locality, *Ariste Joseph B57* (US); Bogotá, *Ariste Joseph s. n.* (US); Sopó, *Ariste Joseph B143* (US); Chapinero, Bogotá, July 3, 1934, *Pérez 3077* (US); western slopes of Páramo de Cruz Verde, alt. 3150 m., Oct. 1938, *Cuatrecasas 360* (US); woods along stream, Los Gaques, western slope of Páramo de Guasca, alt. ca. 3250 m., Mar. 12, 1939, *Killip 34163* (US); Macizo de Bogotá, Quebrada Chicó, alt. 2800-3000 m., June 14, 1939, *Cuatrecasas 5483* (US); Macizo de Bogotá, Quebrada del Rosal, malezas, alt. 3200 m., June 29, 1939, *Cuatrecasas 5710* (US), *5710-B* (Col); San Miguel, extreme western end of the savanna of Bogotá, hills, alt. 2840 m., Aug. 15, 1939, *Cuatrecasas 6668* (US); wet ground,



Begonia urticaefolia. Linn.

TAB. 7

Páramo de Guasca, alt. 3000-3500 m., Oct. 11, 1939, *H. García B. 8092* (US).

TOLIMA: forest, "Rosalito" near Páramo del Ruiz, alt. 2900-3200 m., Dec. 15-17, 1917, *Pennel 3126* (NY); forest, Murillo, alt. 2200-2600 m., Dec. 18, 1917, *Pennell 3162* (NY); forest; "La Lora" to summit, New Quindío Trail, Cordillera Central, Aug. 14, 1922, *Killip 9777* (NY, US); along Divide, near Quindió Highway, alt. 3300-3500 m., Mar. 17, 1939, *Killip & Varela 34623* (US); same, Mar. 27, 1939, *Killip & Varela 34595* (G).

CALDAS: Consota, Quindío, alt. 1300 m., *Triana s. n.* (NY); Andes of Quindío, *Triana 3042* (Gen, phot. Macbride, CM no. 7314); Manizales, alt. 2000 m., Feb. 1853, *Triana (389)* (Col); along stream in forest, east of Salento, Cordillera Central, alt. 2000-2200 m., July 25-31, 1922, *Pennell 8930* (G, NY); along stream, edge of forest, "Pinares" above Salento, Cordillera Central, alt. 2700-2900 m., Aug. 2-10, 1922, *Pennell 9348* (G, NY); forest, "Magaña", old Quindío Trail, Cordillera Central, alt. 3200-3300 m., Aug. 1-2, 1922, *Killip & Hazen 9435* (G, NY, US); forest, Río Santa Rita, Salento, alt. 1600-1800 m., Aug. 26, 1922, *Killip & Hazen 10132* (NY); forest, Río San Rafael, below Cerro Tatamá, Cordillera Occidental, alt. 2200-2500 m., Sept. 7-11, 1922, *Pennell 10327* (G, NY); steep open gulch in forest, Cerro Tatamá, alt. 3200-3400 m., Sept. 8-10, 1922, *Pennell 10482* (G, NY); Quebrada de los Termales, alt. 2700 m., Aug. 1944, *Dryander 2760* (US); valleys, Salamina, alt. 3500 m., July 1945, *Tomas 2380* (US).

CHOCO: Dauró, April 6, 1928, *R. A. Toro 1158* (NY).

HUILA: edge of bog, "Balsillas", on Río Balsillas, alt. 2100-2200 m., Aug. 3-5, 1917, *Rusby & Pennell 832* (NY); Cordillera Oriental, on the Caquetá boundary line, Gabinete, alt. 2300-2450 m., Mar. 22, 1940, *Cuatrecasas 8495* (US).

VALLE: Guabito, near Río Tuluá, Sept. 17, 1853, *Holton s. n.* (NY); Western Cordillera at Versalles, 1918-19, *Dawe 838* (NY).

CAUCA: above Paletará, alt. 3000 m., Feb. 1884, *Lehmann 3534* (US); Páramo de Buena Vista, Huila group, Central Cordillera, alt. 3000-3600 m., Jan. 1906, *H. Pittier 1152* (US); Las Escaleritas, Moras Valley, Río Páez basin, Tierra Adentro, alt. 2500-3000 m., Feb. 1906, *H. Pittier 1375* (US); forest, south side of "Llano", "Paletará", Cordillera Central, alt. 3000-3200 m., June 15-17, 1922, *Pennell 6948* (G), *6949* (G, NY, US); moist forest, "San José", San Antonio, Cordillera Occidental, alt. 2400-2700 m., June 28, 1922, *Pennell & Killip 7286* (G, NY, US); hot springs on páramo, Pedro Piso, Puracé, alt. 3600 m., Sept. 1936, *Dryander 1694* (US); slopes in virgin forest, Puracé Pedro, alt. 3400 m., Sept. 1936, *Dryander 1697* (US); woods between the ranges of Munchique and Altamira, Carpinterías, Cordillera Occidental, alt. 2450-2500 m., July 15, 1939, *Pérez & Cuatrecasas 6184* (G); Cordillera Central, eastern slope near the boundary, valley of Río San Marcos, between Jardín and San Rafael, alt. 2700-2900 m., July 25, 1943, *Cuatrecasas 14746, 14759, 14765* (G).

NARIÑO: Páramo del Tábano, crest of the Cordillera, between Pasto and El Encano, western slope, alt. 3200 m., Jan. 11, 1941, *Cuatrecasas 11889* (US).

CAQUETA: Cordillera Oriental, eastern slope, valley of the Río Hacha, woods, Ruidosa, alt. 2000 m., Mar. 26, 1940, *Cuatrecasas 8717* (G); same, below Gabinete, alt. 2100-2250 m., Mar. 23, 1940, *Cuatrecasas 8550* (US).

PUTUMAYO: Páramo del Tábano (?), May 14, 1935, *García 4561* (US); El Encano, Laguna de la Cocha, Páramo "El Tábano", alt. 3300 m., Aug. 10-11, 1939, *García 7837, 7837-A, Balls B-7503* (US); south side of Laguna de la Cocha, Páramo de Santa Lucía (source of the Río Alisales), alt. 2900-3100 m., Jan. 9, 1941, *Cuatrecasas 11867* (US).

DEPARTMENT UNKNOWN: *Mutis* (**type**, not seen); *Bonpland* (! A. DC.); *Linden 389, 390* (! A. DC.); *Holton 726* (NY); July 5, 1920, *Dawe 838* (US); West Cordillera, Río Mundidó, alt. 2700 m., Aug. 1941, *Dryander 2512* (US); West Cordillera, Observatorio, alt. 2600-2700 m., Aug. 1941, *Dryander 2510, 2513* (US).

This species is characterized by innumerable minor forms most of which we find impossible to classify at present. There is some variation in leaf-form, much in indument and very much in the form of the capsule. Furthermore the capsule changes its shape to a very great degree as it develops, the base being late in development but persisting after the horns and column disintegrate. To complicate matters further, the type as shown in J. E. Smith's illustration, has only very young fruit, so that it is impossible to decide what is the typical form of the mature fruit.

Var. **retusa** Smith & Schubert, var. nov., tepalis masculinis interioribus retusis, ad 13 mm. longis, quam eis var. typicae multo majoribus.

VALLE: Cordillera Occidental, páramos, Los Farallones, crest of the cordillera, extreme north of the Alto del Buey range, alt. 3500-3600 m., Oct. 11, 1944, *Cuatrecasas 17942* (G, **type**; US); Los Farallones, extreme north, northwest slope, between Alto del Buey and Quebrada de los Ramos, alt. 3350-3450 m., Oct. 12, 1944, *Cuatrecasas 18039* (G); woods, Los Farallones, extreme north, east slope of Alto del Buey, alt. 3300-3450 m., Oct. 13, 1944, *Cuatrecasas 18095* (G).

Material of var. *retusa* is outstanding because it is somewhat larger in all its parts than that of the typical variety and because the inner staminate tepals are always retuse.

(To be continued)